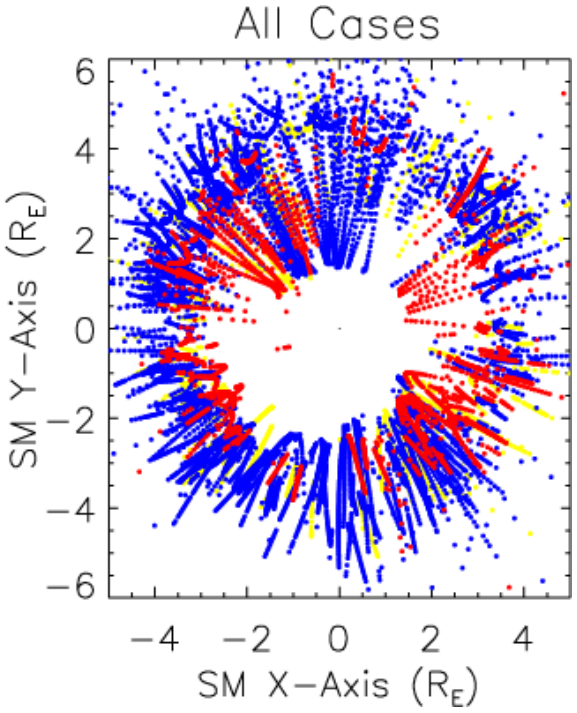
Observed Plasmaspheric Ion Densities and Temperatures

D.L. Gallagher, P.D. Craven, H. Comfort

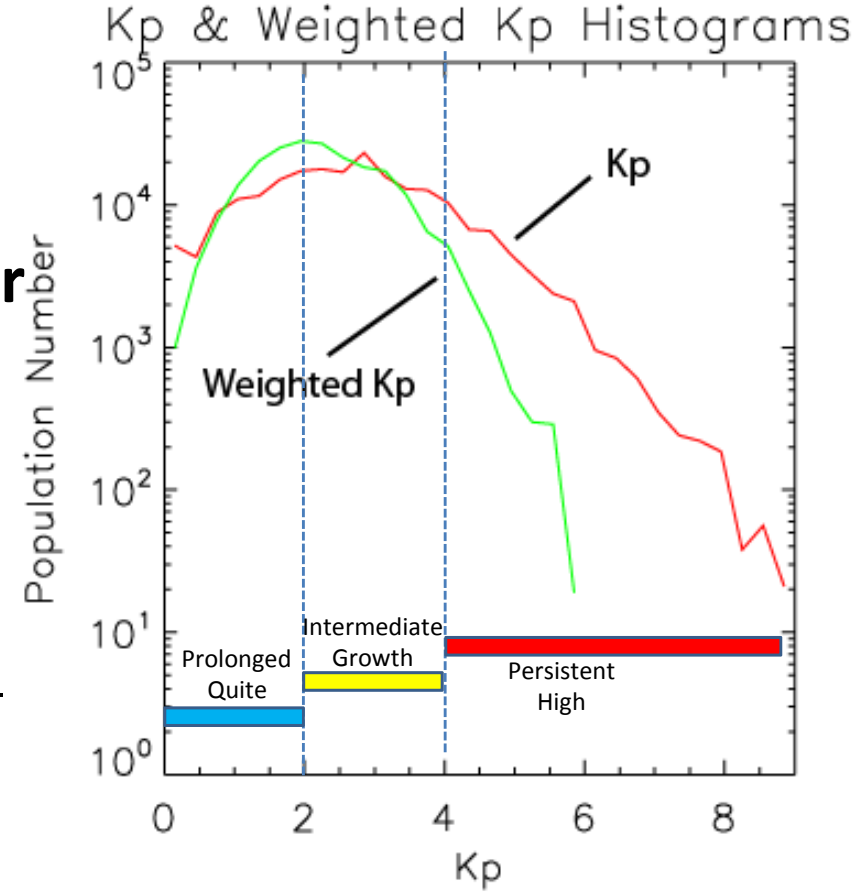


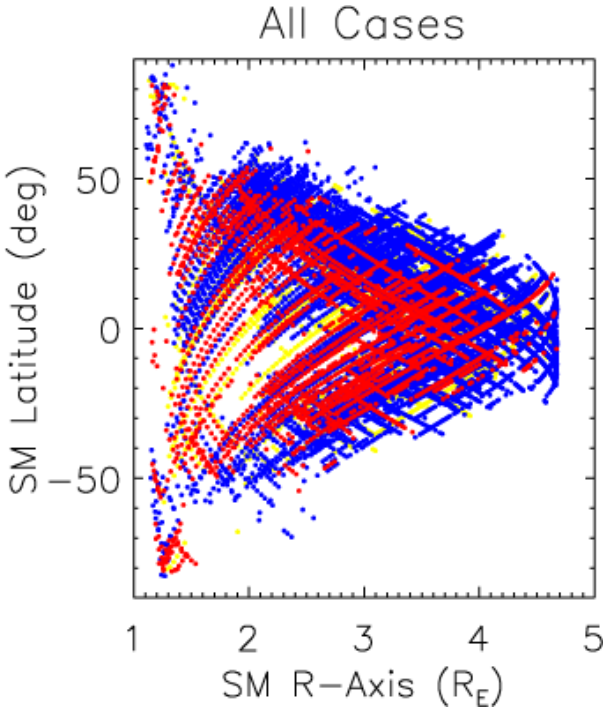
Retarding Ion Mass Spectrometer

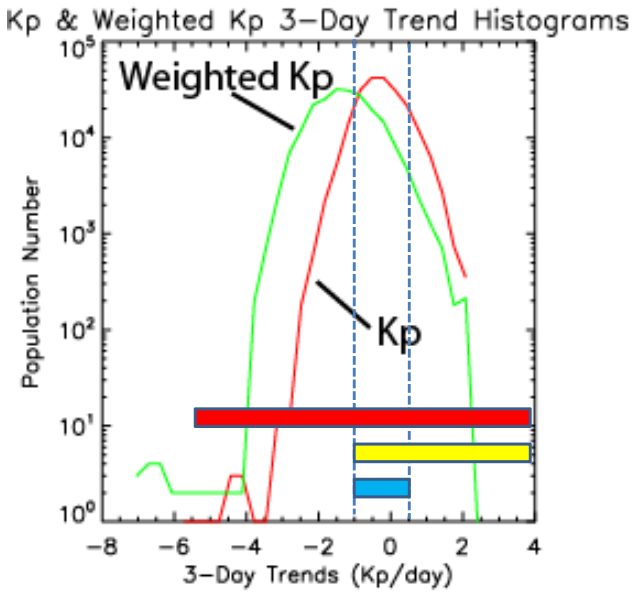
1981-1984

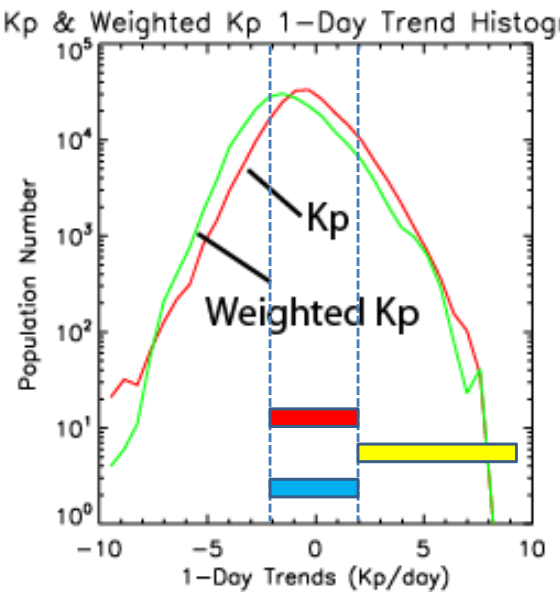
Weighted Kp

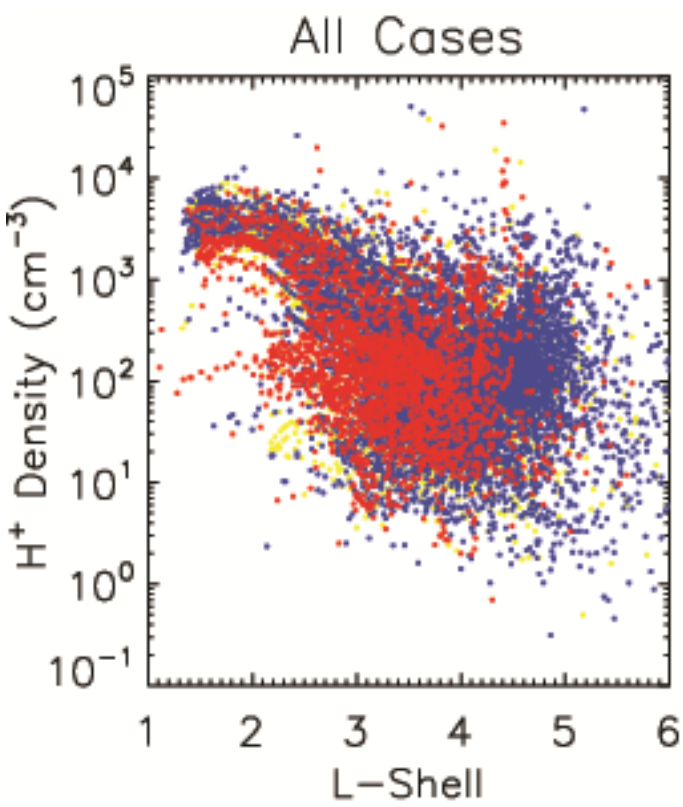
$$\frac{\sum_{t=-5}^{0} \mathrm{Kp} \cdot e^{t_{days}/1.5}}{\sum_{t=-5}^{0} e^{t_{days}/1.5}}$$

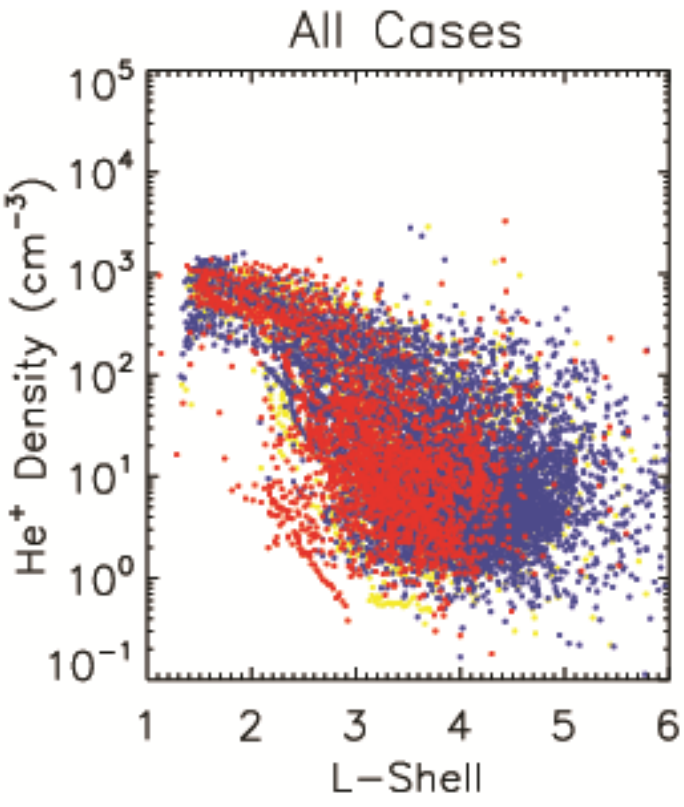


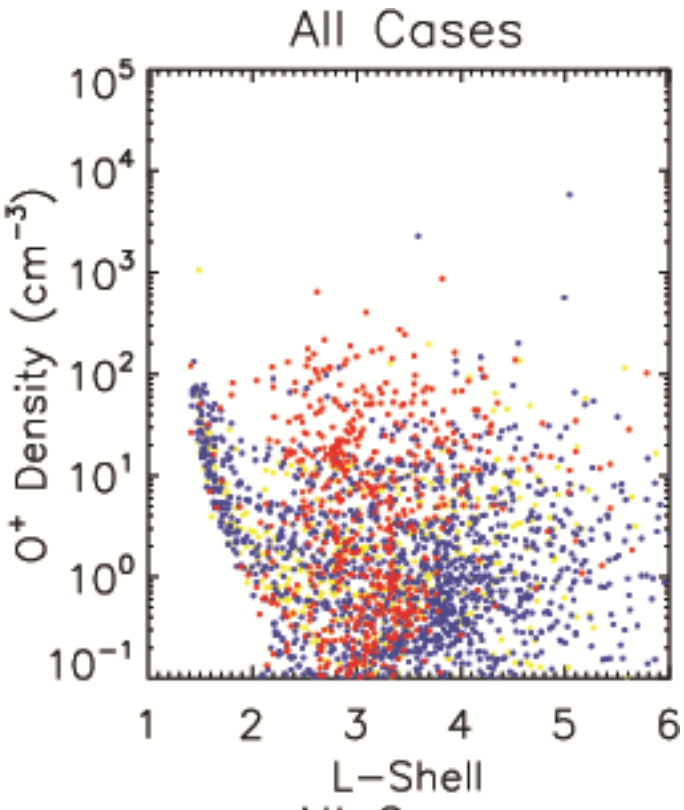


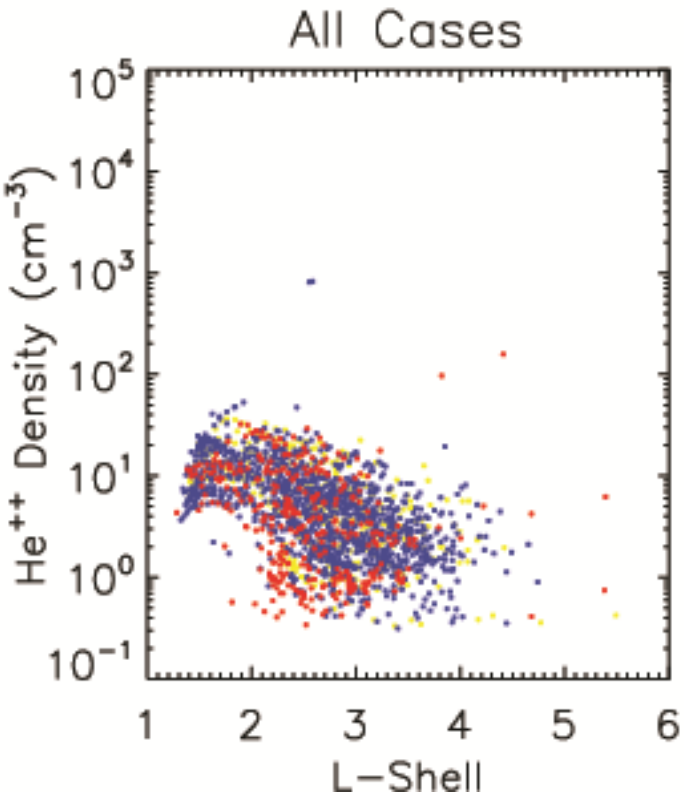


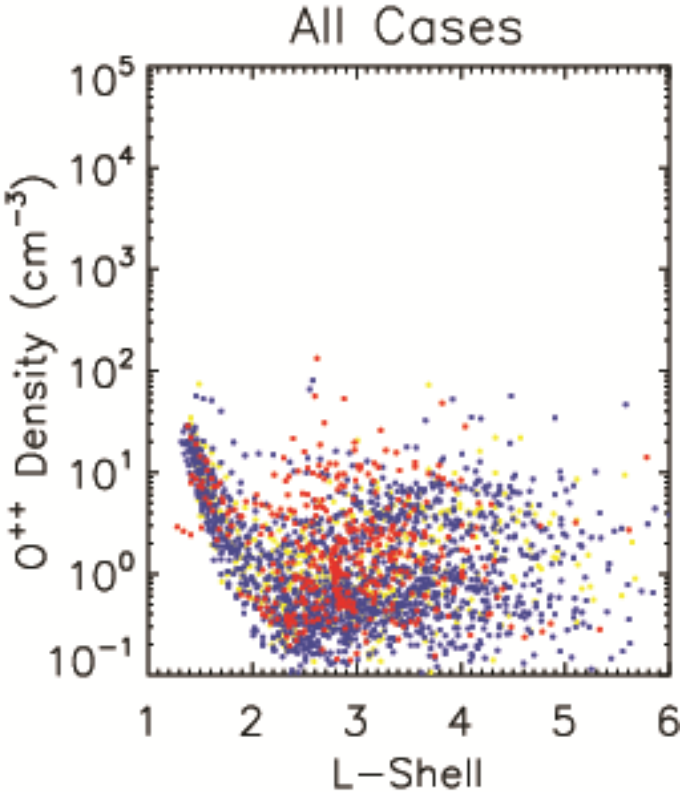




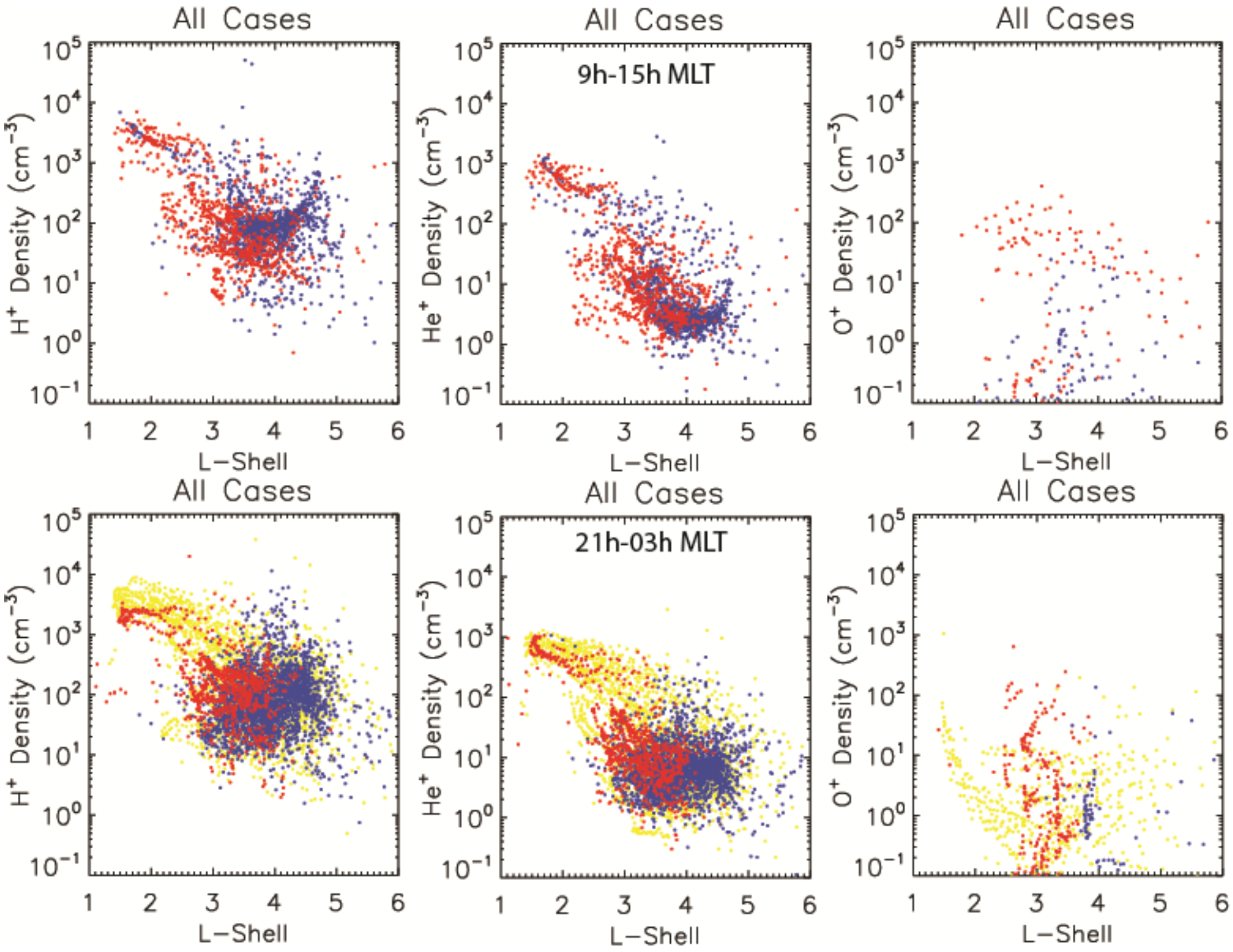


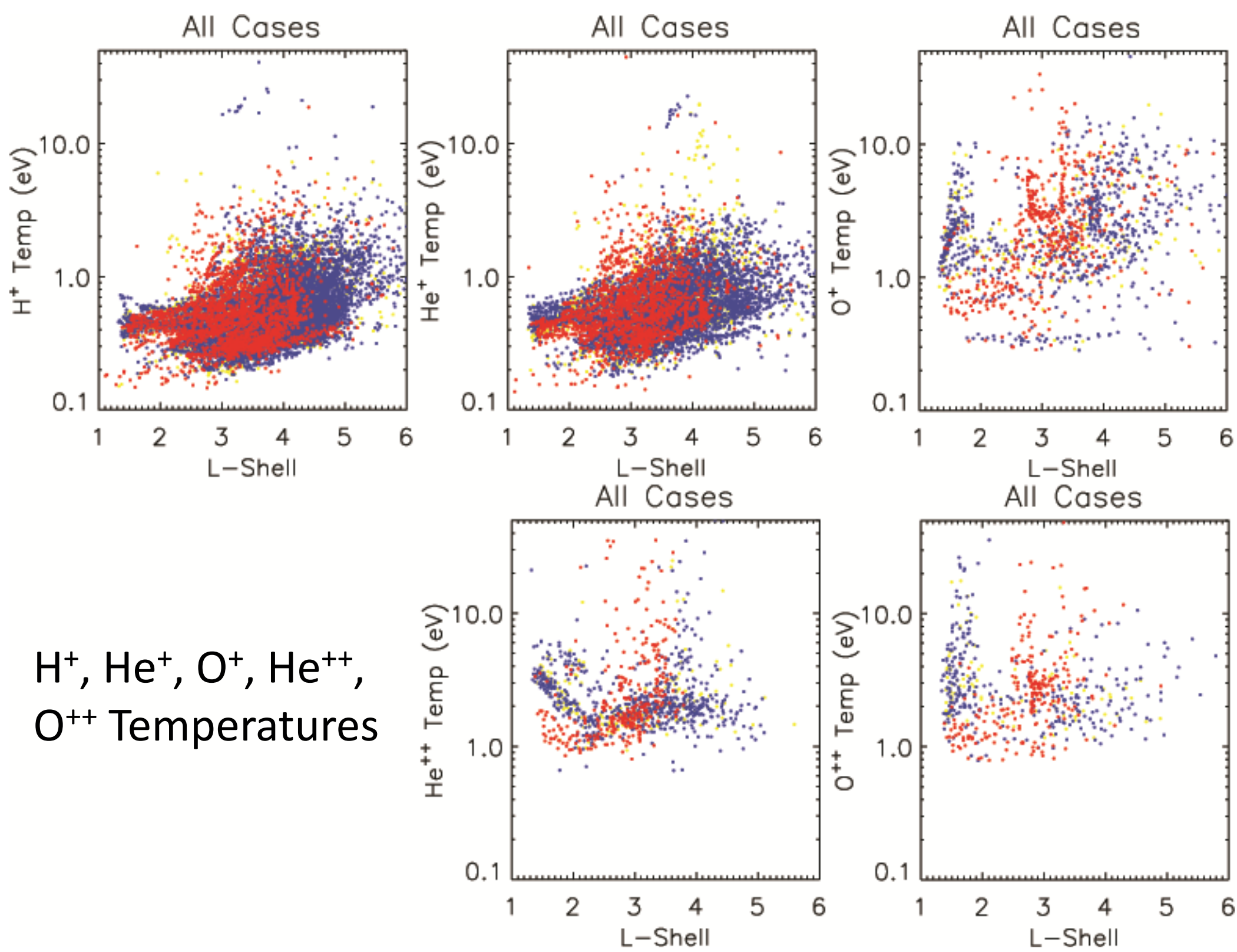




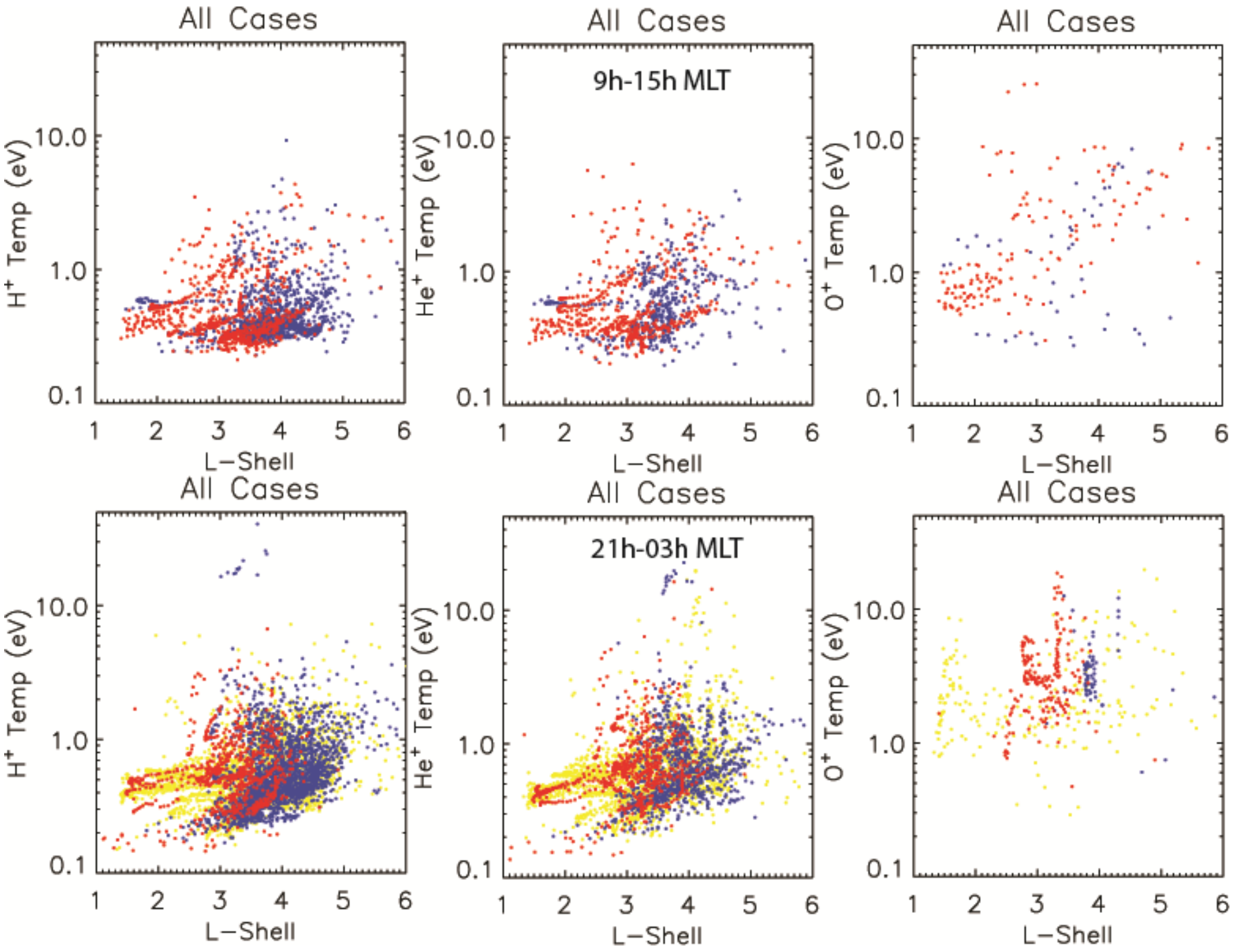


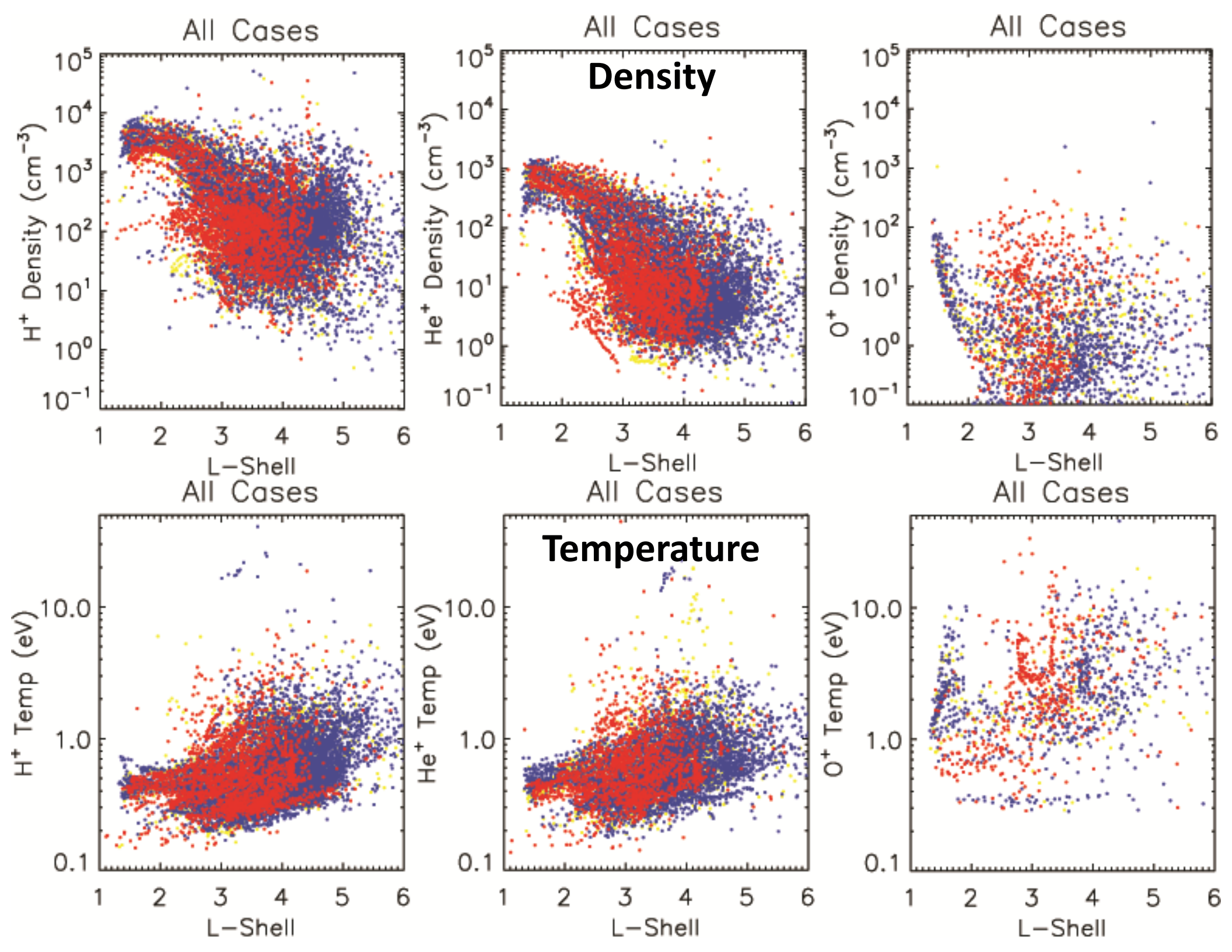
H^+, He^+, O^+, He^{++}, O^{++} Densities


All Cases
All Cases
All Cases
9h-15h MLT
All Cases
All Cases
All Cases
21h-03h MLT
All Cases
H+ Density (cm−3)
He+ Density (cm−3)
O+ Density (cm−3)
L−Shell
10^5
10^4
10^3
10^2
10^1
10^0
10^−1
1
2
3
4
5
6

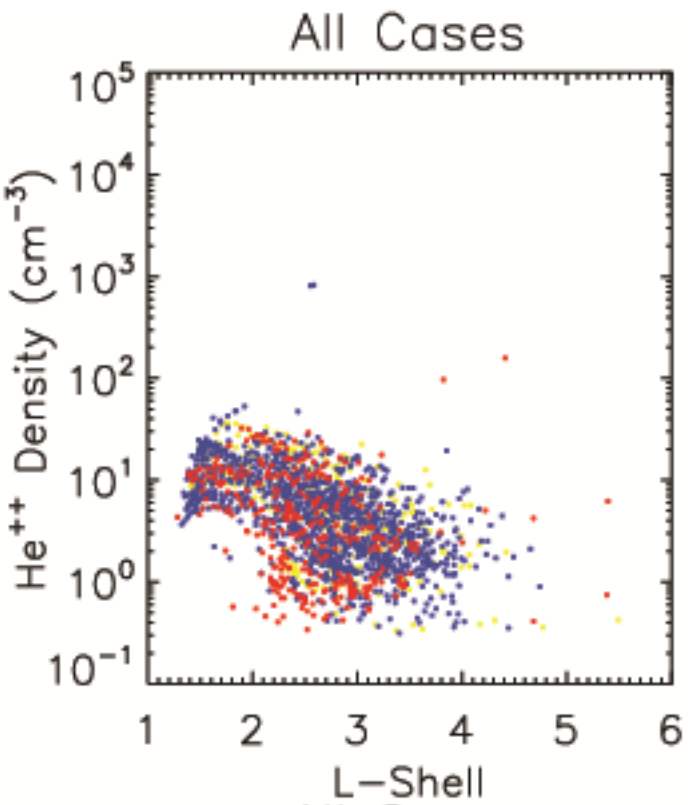


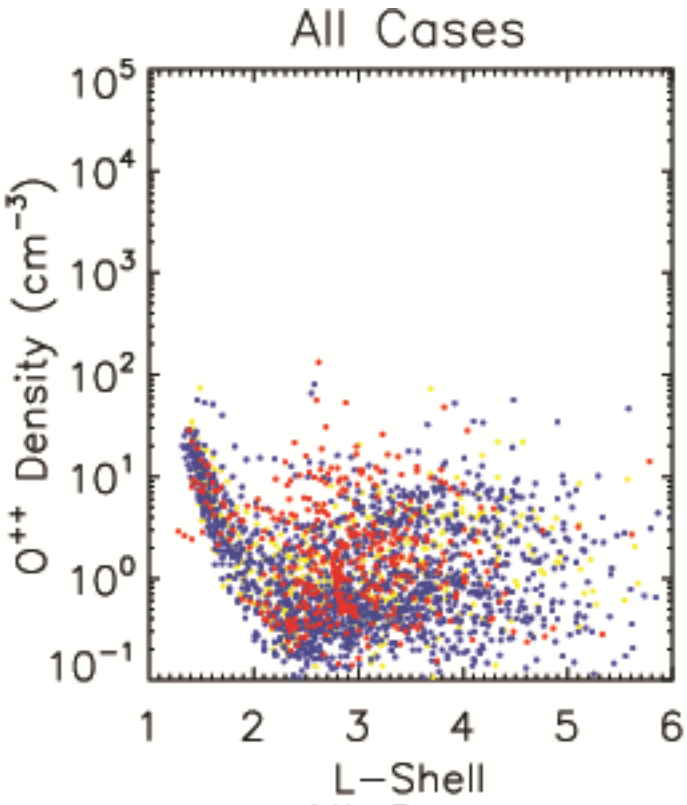
H^+, He^+, O^+, He^{++}, O^{++} Temperatures


All Cases
All Cases
9h-15h MLT
All Cases
All Cases
21h-03h MLT
All Cases
H+ Temp (eV)
He+ Temp (eV)
O+ Temp (eV)
10.0
1.0
0.1
1
2
3
4
5
6
L−Shell

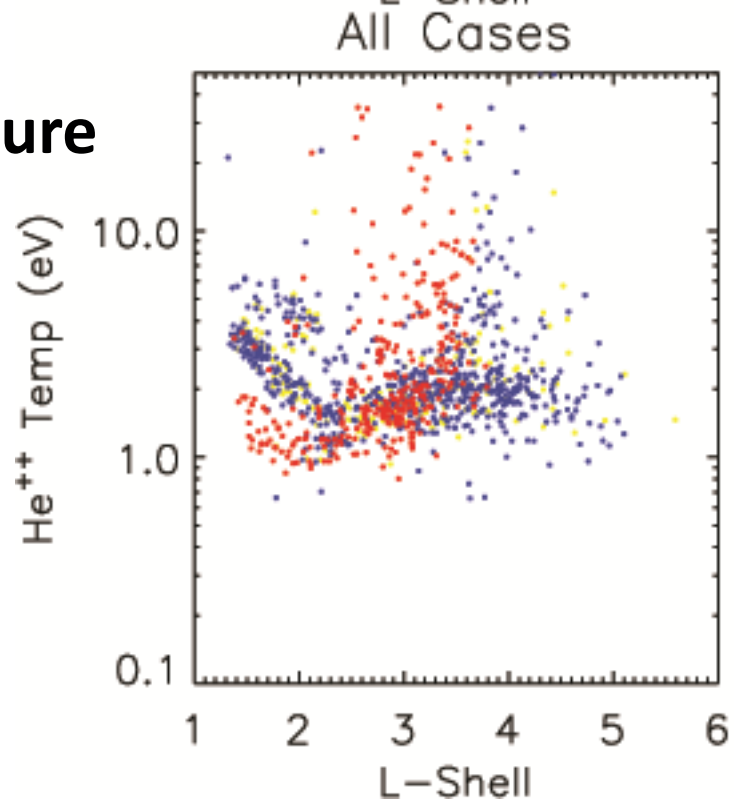

All Cases
All Cases
All Cases
Density
H+ Density (cm−3)
He+ Density (cm−3)
O+ Density (cm−3)
L−Shell
L−Shell
L−Shell
All Cases
All Cases
All Cases
Temperature
H+ Temp (eV)
He+ Temp (eV)
O+ Temp (eV)
L−Shell
L−Shell
L−Shell

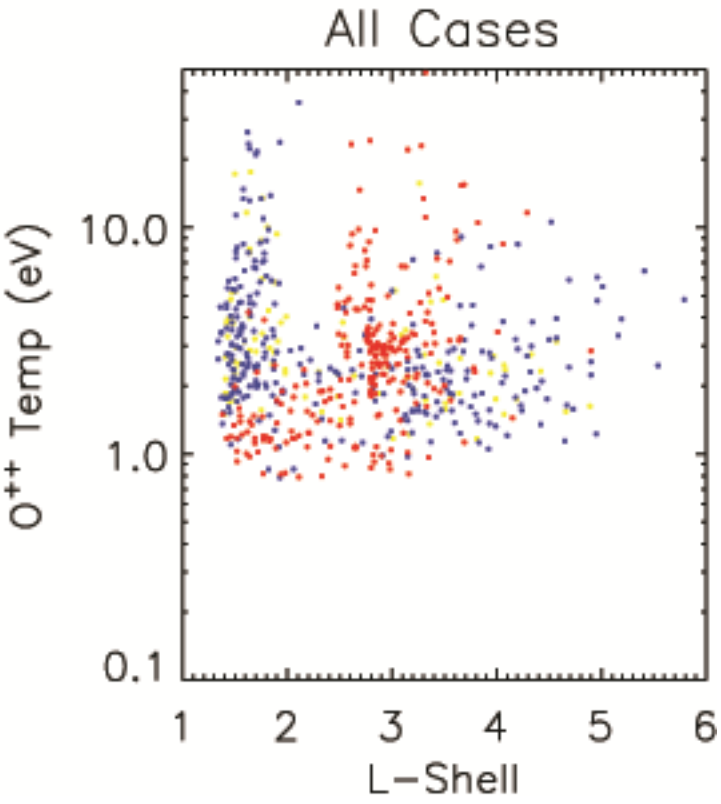
Density





Temperature





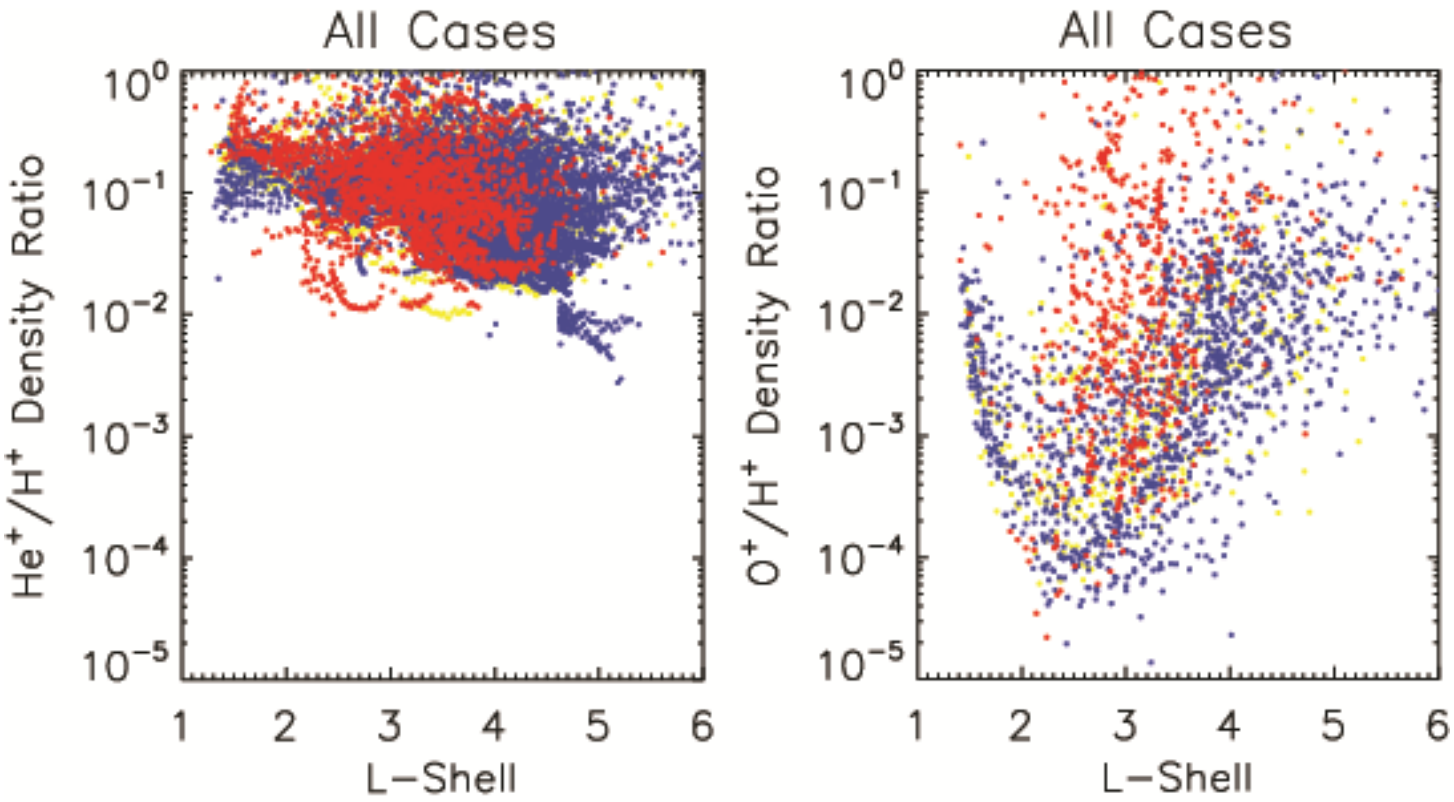
Density Ratios

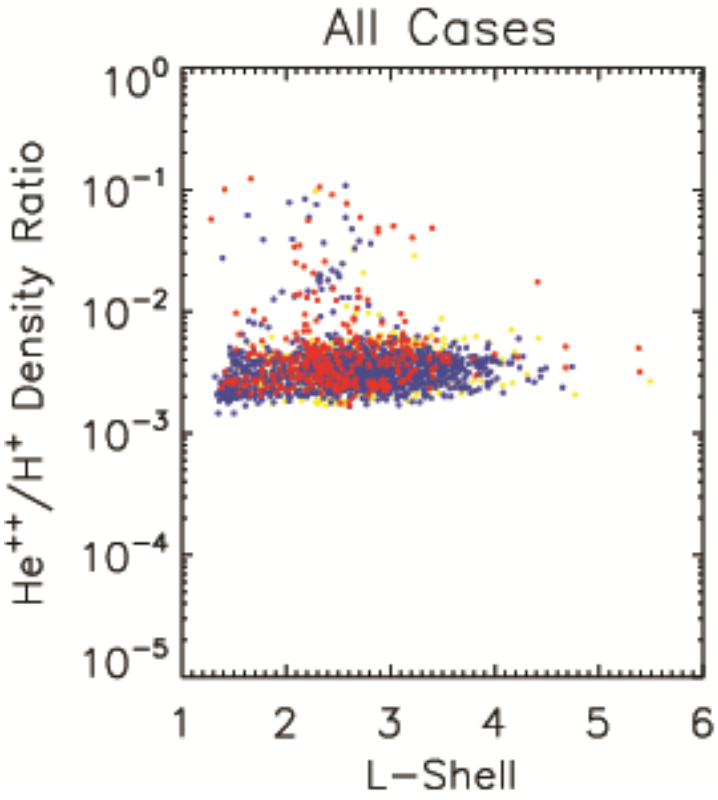
He+/H+

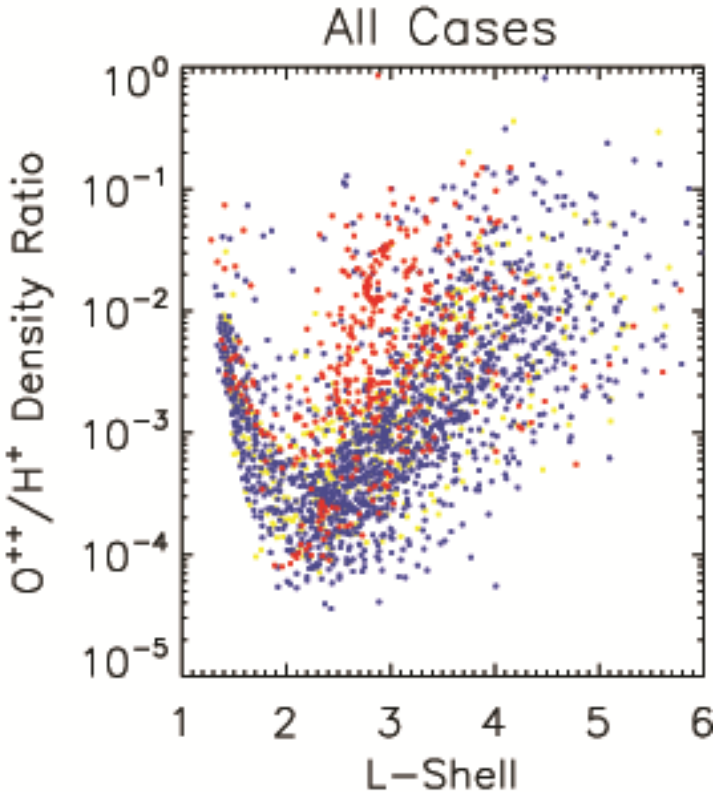
He++/H+

O+/H+

O++/H+



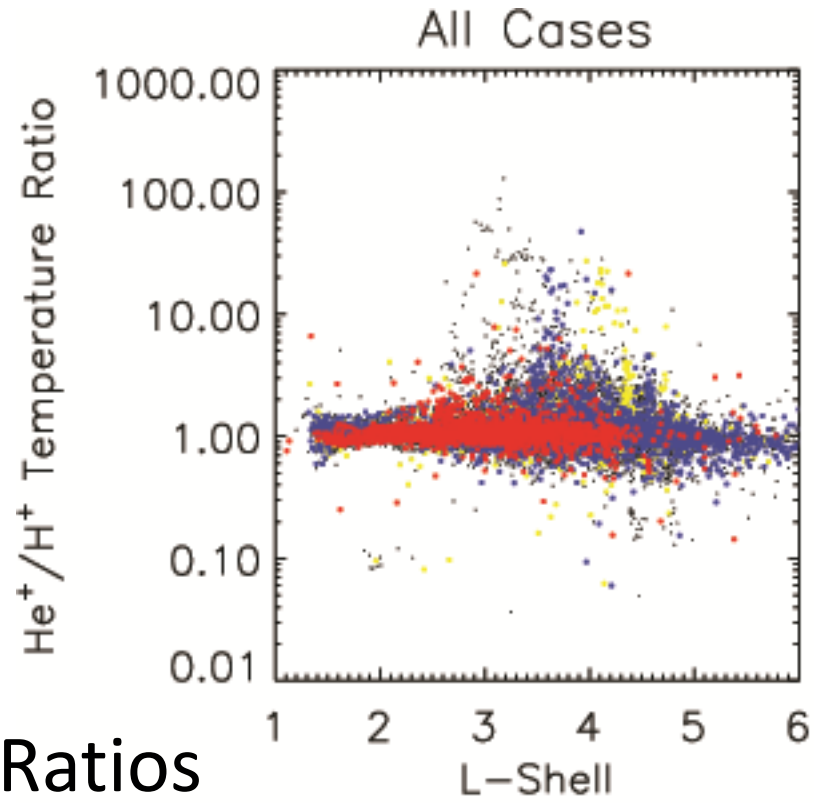
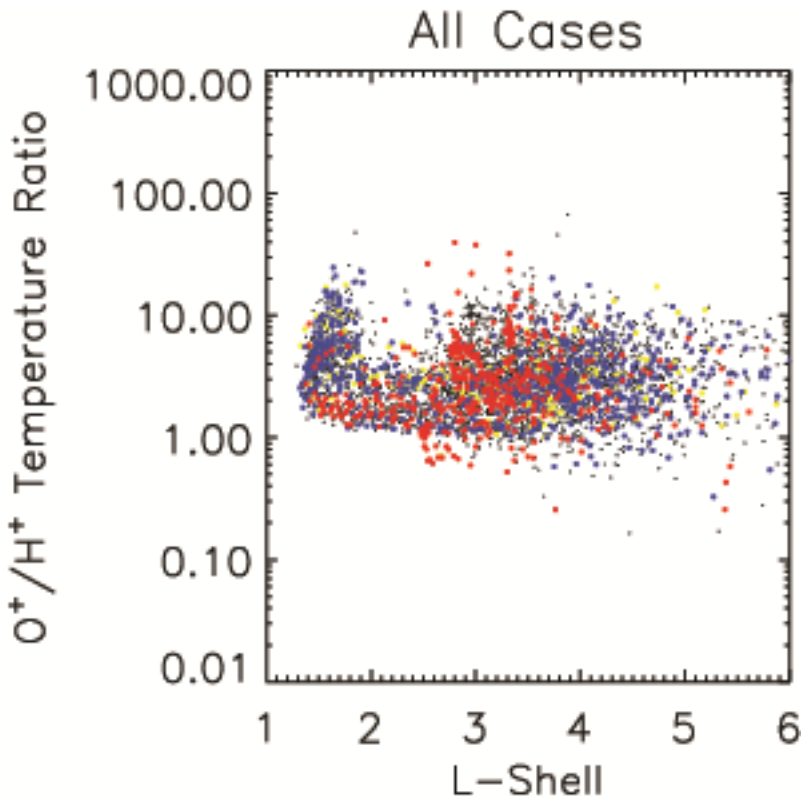
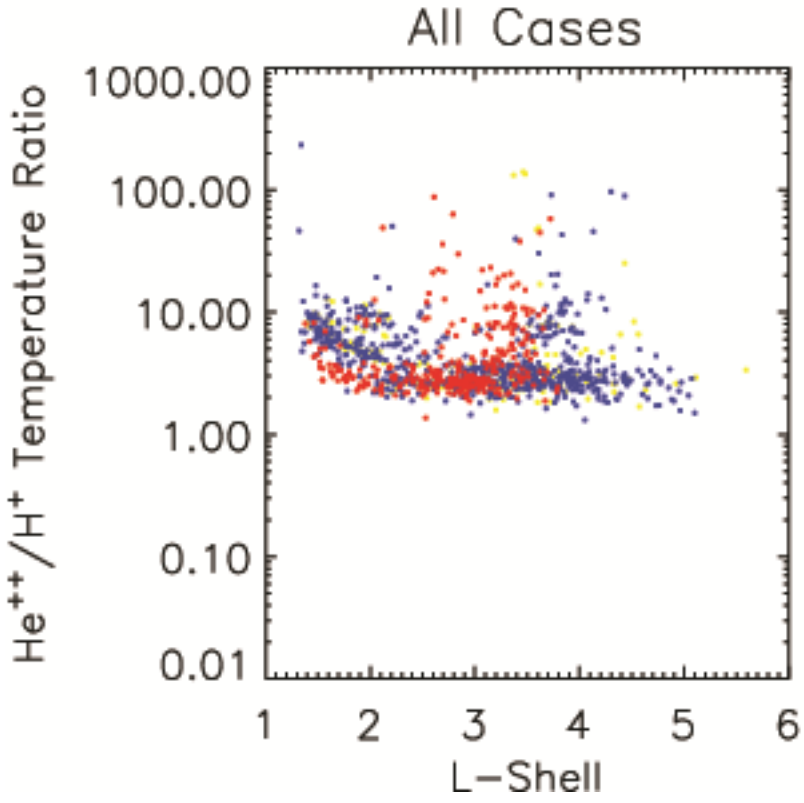
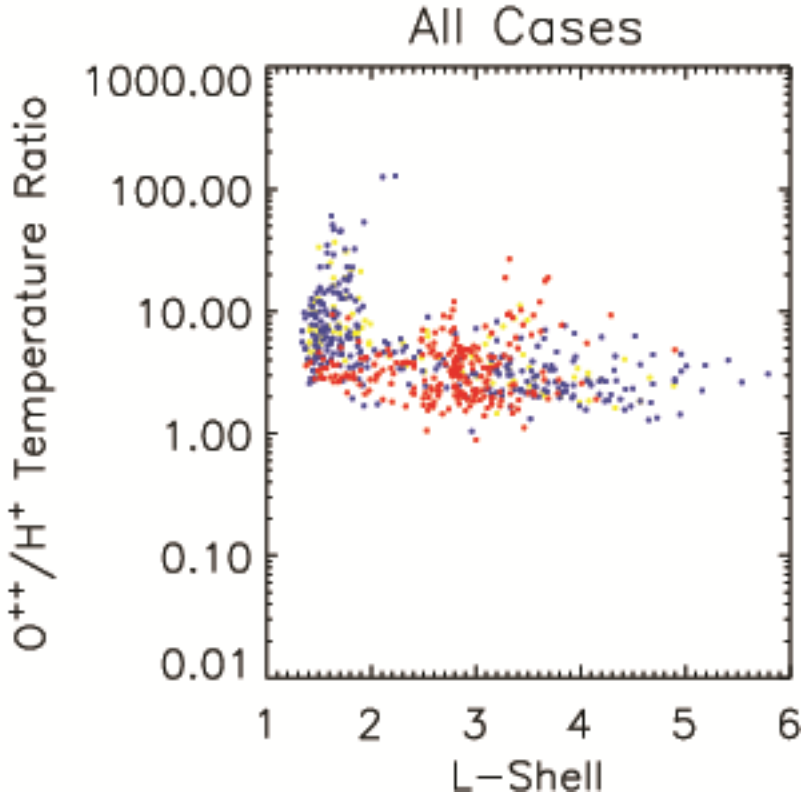




Temperature Ratios

He+/H+

He++/H+

O+/H+

O++/H+